Summary Report of the World Trade Center Technical Review Panel Meeting

June 22, 2004

Prepared for:

Office of the Science Advisor
U.S. Environmental Protection Agency
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NOTICE

This report was prepared by Eastern Research Group, Inc., an EPA contractor, as a general record of discussion held during the fourth meeting of the World Trade Center Technical Review Panel held June 22, 2004 at St. John's University. This report captures the main points and highlights of the meeting. It is not a complete record of all details discussed, nor does it embellish, interpret, or enlarge upon matters that were incomplete or unclear. Statements represent the individual view of each meeting participant, and may or may not represent the analyses or positions of EPA.

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ACRONYMS

CBPR	Community-Based Participatory Research
COPC	contaminants of potential concern
EPA	U.S. Environmental Protection Agency
HEPA	high efficiency particulate air
HVAC	heating, ventilation, and air conditioning
MERV	Minimum Efficiency Report Value
MMVF	man-made vitreous fibers
NYC	New York City
SEC	Securities and Exchange Commission
WTC	World Trade Center

EXECUTIVE SUMMARY

After the collapse of the World Trade Center (WTC) and the subsequent release of contaminants into the environment, the U.S. Environmental Protection Agency (EPA), other federal agencies, New York City (NYC), and New York State public health and environmental authorities focused on numerous cleanup, dust collection, and ambient air monitoring activities to ameliorate and better understand the human health effects of the disaster. While these monitoring and assessment activities were ongoing, EPA began planning for a program to clean and monitor residential apartments. Residents impacted by the World Trade Center dust and debris were eligible to request federally funded monitoring and/or cleaning of their residences. The cleanup continued into the summer of 2003, by which time EPA had cleaned and monitored 3,400 apartments and monitored an additional 800 apartments.

EPA convened a technical panel of experts who have been involved with the World Trade Center assessment activities to provide advice on the effectiveness of these and related programs. Dr. Paul Gilman, EPA Science Advisor, serves as the chairperson, and Dr. Paul Lioy, Professor of Environmental and Community Medicine at the Environmental and Occupational Health Sciences Institute of the Robert Wood Johnson Medical School-UMDNJ and Rutgers University, serves as vice chair. This report summarizes the fourth technical panel meeting in New York City, held at St. John's University in Saval Auditorium on June 22, 2004.

Dr. Gilman and Dr. Lioy facilitated the meeting and presented opening comments on the agenda for the meeting. During these opening comments, a panel member requested a modification to the agenda, moving the Community Subpanel presentation from the afternoon session to the morning session. This request was accommodated, and the resulting agenda for the day was rearranged as follows:

- Opening remarks
- Update on Community-Based Participatory Research: Report from Subgroup
- Identifying Signatures for WTC Contamination: Report from Subgroup
- Public Comments/Question-and-Answer Session
- Panel Discussion Regarding Screening Survey
- Particles and HVAC Systems Presentation
- Public Comments
- Closing Comments/Adjourn

Dr. Lioy postponed his presentation on Studies of Organic Contamination from the WTC until after the meeting so that the agenda could be reorganized and because Dr. Frederica Perera, who requested the presentation, was not present.

At the end of the meeting, Dr. Gilman and the panelists summarized some of the key conclusions and ideas proposed by individual panelists. These included:

- EPA will develop one or two options on how to proceed with the sampling plan to define geographic extent and contaminants of concern. This planning effort will be conducted in concert with the planning activities of the signature development subpanel. These sampling options will be ready for discussion at the July 26 meeting.
- EPA will work with McVay Hughes and Siegel de Hernandez to explore mechanisms for community participation.
- A better inventory of school and fire department buildings needs to be developed to see how these buildings are distributed geographically.
- EPA will investigate options for funding the Community Participation and Signature Development Subpanel efforts.
- Some panelists and the community have requested transcripts of future technical panel meetings.
- Some panelists asked that discussion on "unmet health needs" be initiated at the next meeting.
- The panelists will review the COPC document prior to the next technical panel meeting.
- Dr. Gilman will follow up with Newman on developing next steps for collecting data from other sources.
- Dr. Gilman will follow up with Radhakrishnan to compile data into a format that may be shared.

1. INTRODUCTION

After the collapse of the World Trade Center (WTC) and the subsequent release of contaminants into the environment, the U.S. Environmental Protection Agency (EPA), other federal agencies, New York City (NYC), and New York State public health and environmental authorities focused on numerous cleanup, dust collection, and ambient air monitoring activities to ameliorate and better understand the human health effects of the disaster. While these monitoring and assessment activities were ongoing, EPA began planning for a program to clean and monitor residential apartments. Residents impacted by the World Trade Center dust and debris were eligible to request federally funded monitoring and/or cleaning of their residences. The cleanup continued into the summer of 2003, by which time EPA had cleaned and monitored 3,400 apartments and monitored an additional 800 apartments. Since then, EPA has been developing a draft sampling plan to study the contamination and recontamination of spaces in lower Manhattan that may have been contaminated by the WTC disaster.

EPA convened a technical panel of experts who have been involved with the World Trade Center assessment activities to provide advice on the effectiveness of these and related programs. Dr. Paul Gilman, EPA Science Advisor, serves as the chairperson, and Dr. Paul Lioy, Professor of Environmental and Community Medicine at the Environmental and Occupational Health Sciences Institute of the Robert Wood Johnson Medical School-UMDNJ and Rutgers University, serves as vice chair. Members of the panel include representatives from the federal agencies directly involved in the air quality response and monitoring, the New York City Departments of Health and Environmental Protection, and outside experts.

EPA's goals in forming this panel and holding the current and planned meetings are:

- To obtain more input on ongoing efforts to monitor the situation for New York residents and workers impacted by the collapse of the WTC.
- To help guide EPA's use of the available exposure and health surveillance databases and registries to characterize any remaining exposures and risks, identify any unmet public health needs, and recommend any steps to further minimize the risks associated with the aftermath of the WTC attacks.

Four technical panel meetings and one conference call have been held to date:

- March 31, 2004 at the Alexander Hamilton U.S. Customs House;
- April 12, 2004 at the Tribeca Performing Arts Center at the Borough of Manhattan Community College;
- May 12, 2004 conference call;
- May 24, 2004 at Saval Auditorium at St. Johns University; and
- June 22, 2004 at Saval Auditorium at St. Johns University.

This report summarizes the presentations and panel discussions at the June 22 technical panel meeting held at St. John's University. Information on each of these meetings is provided on EPA's website (http://www.epa.gov/wtc/panel).

1.1 Panel Attendees

The following panel members were not present at this technical panel meeting:

- Jessica Leighton
- Catherine McVay Hughes
- Greg Meeker
- Frederica Perera
- Joseph Picciano
- Sven Rodenbeck
- Claudia Thompson

Christopher D'Andrea served as an alternate panelist for Jessica Leighton. Mr. D'Andrea is a Certified Industrial Hygienist working with the New York City Department of Health, Office of Environmental and Occupational Disease Epidemiology. Micki Siegel de Hernandez served as an alternate panelist for Catherine McVay Hughes. Ms. Siegel de Hernandez has a Masters of Public Health and is the Director of Health and Safety for the Communications Workers of America, District One. Additionally, Mark Wilkenfeld, a professor of medicine at the Columbia University Health Sciences Division, sat with the panel at the request of City Councilman Allen Gerson.

1.2 Purpose and Agenda

The purpose of this technical panel meeting was to continue discussions on specific elements that could be incorporated into a draft sampling plan. Dr. Gilman opened the meeting at 9:35 a.m. and summarized the purpose and agenda for the meeting. Dr. Gilman introduced the alternate panelists, Christopher D'Andrea and Micki Siegel de Hernandez. Ms. Siegel de Hernandez requested that her presentation on the Community-Based Participatory Research be made in the morning session instead of the scheduled afternoon session. This request was accommodated, and the resulting agenda for the day was rearranged as follows:

- Opening remarks
- Update on Community-Based Participatory Research: Report from Subgroup
- Identifying Signatures for WTC Contamination: Report from Subgroup
- Public Comments/Question-and-Answer Session
- Panel Discussion Regarding Screening Survey
- Particles and HVAC Systems Presentation
- Public Comments
- Closing Comments/Adjourn

(The original agenda is provided in Attachment A.)

Dr. Lioy postponed his presentation on Studies of Organic Contamination from the WTC until after the meeting so that the agenda could be reorganized and because Dr. Frederica Perera, who requested the presentation, was not present.

2. WELCOME, PURPOSE, AND OPENING REMARKS

Dr. Paul Gilman, EPA Science Advisor
Paul Lioy, Professor of Environmental and Community Medicine at the Environmental and Occupational Health Sciences Institute of the Robert Wood Johnson Medical School–University of Medicine and Dentistry of New Jersey and Rutgers University

Dr. Gilman opened the meeting by welcoming the participants and reviewing the agenda for the meeting. Dr. Gilman introduced the two alternate panelists, as well as Dr. Leslie Sparks from EPA's National Homeland Security Research Center, who would be making a presentation on heating, ventilation, and air conditioning (HVAC) systems for the panel. Their biographies were distributed in the meeting packets and are posted on EPA's WTC page.

Dr. Gilman asked the panel to consider two questions during their discussions:

- What is an adequate timeline for the development of a signature profile?
- What is the significance of not identifying that signature profile in a sampling location?

Dr. Gilman reminded the panel that their purpose is not to reach consensus on any particular issue, but rather, for each member to express their opinion and comments as individuals. He further noted that panelists should represent themselves and not any particular institution. EPA (and possibly other government entities) will use the individual panelist's input in their decision-making processes.

Ms. Siegel de Hernandez thanked Dr. Gilman for his introduction and provided a brief summary of the organization she represents. She stated that the community Subpanel and the groups they represent met recently and decided to move their presentation to replace the morning public comments session. Dr. Gilman suggested that they make their presentation at the start of the meeting instead so that no public commenters were unknowingly displaced.

3. UPDATE ON COMMUNITY-BASED PARTICIPATORY RESEARCH

Micki Siegel de Hernandez, Community Subgroup Alternate

Micki Siegel de Hernandez opened her presentation by reviewing the topics she would cover, including a further introduction to Community-Based Participatory Research (CBPR), community concerns about the current process for public participation in this technical panel, and requests from the community to improve this process.

Ms. Siegel de Hernandez explained that CBPR is a structured way to collect and organize information from the public. It ensures that those populations that are most affected by a process have input into that process, and she expressed that it should apply to all aspects of the technical panel's deliberations.

She reviewed multiple benefits of implementing CBPR, including establishing meaningful dialogue, increasing trust and acceptance, facilitating a greater understanding of technical issues, integrating unique cultural factors, and increasing dissemination of information between the panel and the community.

Ms. Siegel de Hernandez reviewed the basic seven steps for implementing CBPR, and stated that the community feels that CBPR should be implemented because they are dissatisfied with current process being used to involve the public. She itemized the community's concerns with the current process:

- The current process does not facilitate meaningful input.
- A single community liaison cannot synthesize and communicate concerns in the short period of time between when technical reports are distributed and subsequent meetings.
- Lack of meeting transcripts does not allow careful consideration of all issues discussed at technical panel meetings.
- The process is not clear or transparent, and the community feels ancillary to the process.
- The public is uncertain how decisions are made during and between public meetings.

Further, Ms. Siegel de Hernandez expressed the community concerns with the following technical issues that the panel has been exploring:

- The development of a WTC signature is interesting research, but not necessary to complete testing and cleanup.
- The development of a WTC signature has major policy implications that have not been addressed.

Ms. Siegel de Hernandez itemized requests from the community, including comprehensive testing for a range of contaminants in concentric circles outward from the WTC site, with special attention to underrepresented communities, ventilation, residential and non-residential spaces, and plans to protect the environment from future demolition.

Ms. Siegel de Hernandez requested the following items from Dr. Gilman in advance of the next technical panel meeting on July 26, 2004.

- Agreement to incorporate CBPR into the technical panel process.
- Funding for the community to hire a facilitator of their choosing.

- Funding for the community to obtain technical consultants of their choosing as they feel is necessary.
- Discussion of unmet public health needs at next technical panel meeting.

Panel Discussion

Gilman reiterated that the nature of the panel is not to make decisions or come to a consensus. Rather, the purpose of these meetings is to receive individual comments and advice from members of the technical panel. The reason there is not a clear and transparent decision-making process is because EPA is not asking the panel to make any decisions. There is occasionally some electronic mail communication on topics, most of the discussions are held in this forum.

Gautier asked Siegel de Hernandez how CBPR would be implemented into these Panel Meetings. Siegel de Hernandez stated that implementation is different according to the specific project. In the community setting the facilitator collects opinions and helps to organize them, often creating subgroups and advisory committees. The facilitator could also act as a liaison between the community group and the technical panel. Marcia Pinkett-Heller is an expert in CBPR that the WTC community groups have used, and she could help with the implementation.

Lippman noted concern that the purpose of this panel is to review complex technical issues, and that the sampling plan the public is requesting is very complex and expensive. At the start of these meetings, the charge to the panel was to consider the need for further sampling to characterize exposure, reexposure, and the adequacy of cleanup activities. Lippman suggested that the panel focus on what can realistically be accomplished. He noted that the community might be asking for more than the panel can deliver.

Prezant complimented the subgroup on an excellent presentation. He expressed concern about the difficulty in devising a testing program that will indicate areas that need cleaning while avoiding a research program. He noted that this panel does not make policy; rather, panelists are asked to provide suggestions to EPA, and perhaps to other organizations. Prezant suggested that perhaps the technical panelists should direct their comments and suggestions to EPA and to the community, and then the community has the responsibility to communicate those findings to their representatives and appropriate government entities. Lioy suggested one possible course of action: determine if WTC contamination exists in a space using the signature, and then if it does, turn that information over to the appropriate agency for cleanup.

Prezant noted that community involvement is important for the success of this program. It would not behoove these efforts to spend time and money to develop a program that the community has no faith in. Stellman reiterated that the community must be involved in every step of this process in order to unravel the mistrust that is already present. CBPR offers a structured way to implement this. Wilkenfeld added that this city council district

is quite diverse, and therefore it is important to include the community as much as possible.

Siegel de Hernandez noted individual panelists' concerns that CBPR will delay the process of developing a program; however, the community feels that properly implemented CBPR will streamline the process. She noted misunderstanding that the community is proposing unlimited sampling for unlimited contaminants; however, the community has never seen a budget proposed. Therefore, they suggest that the sampling and testing program be developed very scientifically and with flexibility, with community input.

Lioy and Lippman expressed concern that the community's remarks regarding the development of a WTC signature as a research project indicate they still have no trust in the panel. Lioy believes the development of the signature is vital to conduct representative sampling and to determine the extent of contamination, since many of the contaminants involved are not necessarily related to WTC processes. He expressed concern that in order to answer these questions regarding the extent and level of WTC contamination, a signature must be developed. Lippman stated that a signature is critical to interpreting the samples, and he believes the Meeker's suggested approach provides a good method to do this. Lippman was also disappointed to hear the level of mistrust expressed by the community when they implied that the development of a signature is a diversion to establishing the level and extent of contamination from WTC processes. Lippman felt that the panelists considered EPA's original proposal and made good efforts to improve them to meet the community's concerns. He thought the most useful movement by the panelists is the focus on a signature that can reasonably and efficiently be measured in a wide area.

Siegel de Hernandez responded that she did not believe that the community's concerns were solely based in distrust, but rather, they have carefully considered the technical discussions and are still discussing their implications. The community does not believe a signature is necessary prior to testing.

Newman commented that he feels the community has been very patient in dealing with this lengthy process, and noted that their requests should be considered. Prezant stated his belief that the panel has made progress, especially considering the quantity of information that has been involved and the fact that this is a volunteer panel. He understands, however, that the community has concerns about the prior work, and therefore he envisions that the community would accept a lot of responsibility in this process to ensure that these concerns are met.

Newman recalled that the panelists were instructed to predicate these discussions on the basis of science and health, without consideration for finances. Budgets, however, are a practical matter that may present constraints in the future and should be addressed. Gilman responded that he feels very strongly that EPA most needs technical advice from the panel, including consideration of the soundest approach to sampling, testing, and interpreting the results. For example, he asked the individual panelists to comment on the

best way to develop and validate a signature. Then EPA and other agencies could take that information and flesh out the various sources from which funding may be derived.

4. IDENTIFYING SIGNATURES FOR WTC CONTAMINATION: REPORT FROM SUBGROUP ON PROPOSED TIME TABLE TO DEVELOP A VALIDATED WTC DUST SIGNATURE METHOD

Morton Lippman, Professor of Environmental Medicine, Nelson Institute of Environmental Medicine, New York University School of Medicine

Dr. Lippman opened his presentation by defining the WTC signature:

> "A set of analyzable materials, elements or chemical compounds which individually or in combination provide adequate evidence of contamination from World Trade Center dust and/or combustion products at concentrations determined to be of significance."

He explained that the subpanel members were tasked to suggest guidelines for the development of the signature.

Dr. Lippman presented a timeline for the development of the signature, and noted that these estimates may be delayed by a month at this point:

Approximate Schedule	Task
June 2004	• Develop guidelines for participating research labs.
	• Establish sampling subgroup to identify methods, protocols, and analysis.
July 2004	• Compile list of archived samples and results.
August 2004	• Identify and arrange for participating laboratories.
	• Develop requirements for sampling.
Immediately after authorizing laboratories	• Begin analysis of archived samples.
1 to 2 months after authorizing laboratories	• Provide interim report on robustness of proposed signature components.
2 to 3 months after authorizing laboratories	• Begin collection and analysis of "typical" test samples.
3 to 4 months after authorizing laboratories	• Define detection limits for signature components.
	• Establish analysis flow chart.
Spring 2005	• Final report on success of WTC signature development.
	• Determine analytical benchmarks.
	• Peer review.

Panel Discussion

Markowitz asked for clarification on the analytes this timeline considers. Lippman indicated that to some extent the proposed timeline considers the signature, contaminants of potential concern (COPCs) and new analytes as indicated by analysis of the WTC samples. Where there is adequate proportionality of WTC dust and COPC, analytes would be included. Gilman clarified that if a signature exists, then archived samples would be used to quantify the relationship of the signature to COPC, and then current sampling would be conducted to verify those relationships. Lippman agreed that is what needs to be completed.

Markowitz expected that archived samples from 2.5 years ago would change over time. Therefore, one could not be sure that these are representative of samples collected now. Lioy noted that one of Meeker's goals was to identify materials that would least degrade over time, which is a typical methodology for analyzing archived samples.

Stellman asked how the use of a signature would be different than sampling for all COPCs and fibers. Lippman noted that the elemental x-ray analysis enables the identification of slag wool, cement, and gypsum at much higher sensitivities than the COPCs. Therefore, in some cases, the COPCs may not be analyzed, but the analysis can identify the signature. Siegel de Hernandez commented that COPC analysis has to be used to establish the signature correlations.

Gilman, Lioy, Newman, and Lippman discussed the implications of finding the signature at various levels verses not finding the signature at all. Lioy expressed concern that the presence of the signature may not necessarily trigger a cleanup action, since the detection limits may be well below a risk action level. Newman asked the panelists to consider the significance of finding no signature in a sampled space.

Lippman noted that lead would probably be found in many spaces, and care should be taken to outline the actions that would be taken in this case. Lioy suggested that if someone finds a non-WTC related chemical, there should be a protocol to investigate other sources of contamination, and there should also be a referral to the appropriate agency. Stellman commented that these issues address the question of unmet health needs, regardless of the source.

Markowitz asked if there was an existing accepted protocol for analyzing man-made vitreous fibers (MMVF), cement, and gypsum in the samples so that the proposed methods could be validated. Lippman stated that there is no accepted protocol; however, Meeker demonstrated in his research that slag wool has a very different elemental signature than other glass fibers. Further, the analysis sensitivity was very good and therefore they should be able to obtain adequate detection limits. Lippman stated that in his own judgment, the lack of the presence of the slag wool at this expected low detection limit would indicate that WTC contamination would be below a level of concern. Therefore, there needs to be a definition of the significance of identifying slag wool in a sample. Markowitz added that this definition should also consider false positive results,

since slag wool was used in other buildings. Lioy agreed, although he thought that Meeker's analysis may provide a low false-positive rate because of the complex mixture.

Prezant believed the community misunderstood that the panel is discussing the development of a signature in place of a surrogate, rather than the development of a new surrogate. He suggested that the signature be called a "WTC evidence-based signature" to clarify this confusion. Stellman clarified that she considered the signature a more sophisticated surrogate.

Prezant suggested that the signature should not be selective only for slag wool but also for certain COPCs, accounting for the physics, sedimentation, and aerosolization. Lippman noted that the signature subgroup is planning to look at air sample data as well as settled dust data. Gilman additionally noted that the subgroup should consider the relative proportions of COPCs, slag wool and other contaminants as a function of distance from the WTC site and location of the sample collection.

5. PANEL DISCUSSION REGARDING SCREENING SURVEY

Dr. Gilman referred the panel to the paper that was included in the panelists' packets titled "Further Discussion Regarding World Trade Center Related Sampling" dated June 16, 2004. Dr. Gilman asked the panelists to comment on the geographic extent of sampling, the type of buildings, function of buildings, prior cleaning history, and the type of contamination. To begin the discussions, Dr. Gilman noted one particular suggestion to start sampling at ground zero and move outward.

Geographic Extent

Siegel de Hernandez expressed concern that this program could not move forward without determining the geographic extent. Gilman agreed, and noted that two significant messages that EPA has extracted from these meetings are that the geographic extent and the type of contamination must be determined. Lippman noted that there might be multiple geographic areas to consider, since the fire plume may have traveled differently than the dust plume.

Sampling Units

Newman commented that another primary objective that has been raised is to analyze the extent of contamination in workplaces and nonresidences as well as residences. Siegel de Hernandez asked if Issue 1 of this paper intends "Building Type" to mean occupational settings versus residential settings. Gilman answered that the use of the building is one aspect of building type; other aspects may include cleaning history, degree of contamination, and others that panelists might suggest. Markowitz commented that he believed many if not most panelists agreed that all different building types and a broad geographic extent should be included as part of a sampling protocol.

Stellman requested that the phrase "differences in WTC impact as a function of building type" be changed to say simply "WTC impact as a function of building type." EPA agreed.

Gilman asked if the sampling unit should be the building or the units within the building. Lippman responded that it depends on the situation. If all of the units in the building would be expected to have the same level of exposure, then the building could be considered one unit. A building that received variations in exposure should use the individual apartments or offices as the sampling unit. Stellman indicated that meteorological factors, dispersion studies, building types, and building uses all need to be considered in answering that question. Gautier and Lioy suggested that the panelists refer back to the 10 building types presented on the May 12, 2004 conference call for sorting building uses.

Development of an Evidence-Based Signature

Gilman commented that he heard some questions about the development of an evidence-based signature for WTC contamination. Markowitz expressed confusion about how the signature subpanel's proposal for sampling and testing contradicts the community's requests. The subpanel has suggested testing archived test samples and newly collected typical test samples for both the signature and for COPCs in order to establish the signature. Prezant proposed that this phase of sampling and analysis include new samples as well as archived samples in order to see how analytes have deteriorated over time. Gilman indicated that his impression was that archived samples as well as newly collected samples would be used to develop the signature.

Gilman asked Lippman if COPCs would be tested after the signature is established. Lippman responded that some COPC testing would occur to demonstrate proportionality and rate of loss estimates for the purposes of signature validation. He preferred that the development of the signature would occur in a more limited sample area for more contaminants at a higher detection limit.

Lippman noted that the method of archiving could affect how samples may have deteriorated. Lioy commented that while degradation is inevitable regardless of the archive method, Lioy's samples were sampled and analyzed within 2 months of collection. These samples could be used to measure deterioration over time.

Lioy expressed concern that the community believes the development of the signature is a research project. He suggested that concurrent testing occur to alleviate some of these concerns. Markowitz commented that it is possible that the signature components will not be validated. In that case, 6 months from now the panel would be in the same place as now. For this reason, Markowitz also believes that concurrent testing is important.

Lead Contamination

Prezant expressed concern that lead has been suggested in every meeting as a contaminant for attention; however, there is a plethora of lead data showing that lead levels are not elevated in firefighters working at the WTC site. Also, he noted that Leighton had reviewed lead test data for children and did not find elevated levels. Since some spaces will show increased lead levels upon sampling, the program should have an action plan for dealing with lead issues. He suggested that ultimately, it may be less expensive to test every child (or every child and adult) in Manhattan for lead levels. Lioy indicated that if lead were found in children's blood, then other government programs would be enacted. Newman suggested another option would be to test and clean all spaces in lower Manhattan where a worker or resident felt the space was contaminated, regardless of health or origin of the contamination.

Wilkenfeld was concerned that blood testing and referral would not satisfy the community's concerns. Prezant responded that is the reason why it is essential to have a community participation process in place to ensure that the program is in line with community expectations.

Stellman noted some particular samples from 310 Greenwich Street indicated very high lead levels in residences. Stellman, Lioy, and Christopher agreed that regardless of the origin of the contamination, those spaces need to be cleaned and any children in the spaces need to be tested. Prezant and Lioy noted that they expect that lead will be found in many spaces during sampling. Prezant suggested that some protocol be established to address the case where contamination unrelated to WTC processes is found, since testing of these spaces may be out of the scope of the panel.

D'Andrea clarified for the panel and the community that the reason that adults are not considered as much of a concern as children in residences containing lead is due to the method of expected exposure. Exposure to lead from settled dust occurs via ingestion. Children are expected to be exposed to lead via hand-to-mouth activities, whereas adults are not expected to have significant hand-to-mouth exposure.

Significance of Presence or Absence of the WTC Signature

Lippman commented that the presence of the signature may or may not indicate contamination that requires cleanup, depending on the levels. Lioy agreed with this sentiment, noting that the presence of vitreous fibers or slag wool in very small quantities should not necessarily trigger COPC sampling. If these contaminants were present in some significant ratio, however, then perhaps that would trigger some cleanup or sampling. Lippman suggested that if these issues cannot be resolved during this panel meeting, a subgroup should be formed to investigate them. Maddaloni referred the panelists to the COPC document, in which health-based benchmarks are established for each contaminant of concern.

Lippman noted that the health-based benchmarks presented in the COPC document represent upper bound risks. He suggested that another set of benchmarks be presented that represent a more immediate risk concern. Maddaloni noted that multiple risk levels were originally presented in the COPC document but were later removed after peer review. Lippman and Prezant suggested these multiple risk levels would be useful for the panel.

Synergistic Effects

Prezant noted that while the community had expressed concern about the synergistic nature of contamination, there is no current method to establish a synergistic-based benchmark. Lioy agreed there is no synergistic model, but one could use the linear additivity model based upon specific endpoints. Prezant suggested another method could be to establish an action level if some majority of the contaminants were present within some statistical significance of the benchmark. Siegel de Hernandez commented that the sampling protocol should concentrate on individual contaminants since synergistic effects would require too much time to evaluate.

Concurrent Sampling

Stellman suggested that the program begin now to collect and resample spaces that were previously sampled in order to develop some controls. Gilman noted that parallel paths of action have been suggested during this meeting, including simultaneous sampling for COPCs, the signature, and the variation of a signature with geography. Prezant agreed with the strategy for conducting parallel efforts.

Requests from Community Participation Subgroup Presentation

Markowitz, Prezant, Stellman, Newman, and Gautier all expressed their support for community-based participation. Prezant and Newman noted their support for the use of unedited transcripts of these meetings. Newman, Stellman, and Prezant agreed that the topic of unmet health needs should be discussed at the next meeting.

6. PARTICLES AND HVAC SYSTEMS

Leslie Sparks, EPA Homeland Security Research Center

Dr. Gilman asked Leslie Sparks from EPA's Office of Research and Development National Homeland Security Research Center to make a presentation to the panel providing an overview of HVAC systems. Sparks began his presentation by discussing the various types of HVAC systems, briefly explaining each type. He provided an overview of a centrally ducted system, and pointed out locations of typical particle collection. He discussed the Minimum Efficiency Report Value (MERV) filter rating system used for HVAC systems and presented performance curves of typical HVAC filters with different particle sizes.

Dr. Sparks discussed the expected deposition that would occur within ductwork during a normal contamination event. He did not expect significant deposition under normal conditions, because duct velocities are too high and particle diameters are too small for significant deposition.

Dr. Sparks presented various options for sampling contamination in a HVAC system:

- Filter
- Heat Exchange Surface
- Ductwork

He noted that, when only filters are sampled, the sampling will not find any particles smaller than the filter size. Also, he noted that dust in the ductwork would be predominantly larger than 5 microns.

Panel Discussion

D'Andrea asked what contribution of metals might be expected from ductwork sheet metal. Sparks responded that they have not seen very much.

Gilman and Stellman asked under what circumstances you could expect reentrainment and subsequent exposure of dust particles in the ductwork (e.g., during renovation and construction, during power outages). Sparks indicated they experience reentrainment upon banging on the ducts.

Newman asked if Sparks had suggestions on how to sample an HVAC system. Sparks indicated he would first conduct a visual inspection using fiber optics and determine appropriate sampling locations. Then, wipe samples would be collected within the ductwork, accessed by cutting through the ductwork. He noted that if a large quantity of sample was available, then vacuum sampling would be used. He would consider any areas that are available for sampling within the HVAC, including air-handling units, ducts, and mixing chambers.

Stein asked Sparks to comment on testing the plenum returns. Sparks indicated that these areas are difficult to clean, but could be sampled; however, better results might be achieved by sampling in the supply lines.

Gulack offered that Securities and Exchange Commission (SEC) management had the ductwork cleaned after the attacks and found contamination at levels five times higher than background. Many occupants used high efficiency particulate air (HEPA) filters in their spaces. Also, even though many HVAC filters had been replaced after 9/11, these filters may have been in place while the fires were burning, and may contain some contamination from those processes.

7. PUBLIC COMMENTS

Two public comment sessions were held during the meeting: from 11:25 p.m. to 12:20 p.m. and from 4:30 p.m. to 5:15 p.m. The following members of the public made comments to the panel:

Jenna Orkin
Rachel Lidov
Kimberly Flynn and Suzanne Mattei
Jo Polett
Kelly Colangelo
Robert Gulack
Paul Stein
Patricia Dillon
Matt Viggiano
Ariel Goodman
Stanley Mark
Craig Hall
Pamela Vossenas
Mary Perillo

Comments that were received in writing are provided in Attachment B to this report.

8. CLOSING COMMENTS

Dr. Gilman noted that the development of the signature would require present-day samples as well as the archived samples. He noted suggestions that the signature development work occur concurrently with the work to establish the geographic extent of contamination. He asked the panelists to consider if these efforts could occur concurrently or not. If the efforts are in concert, then parallel efforts are desirable.

Dr. Gilman and other panelists noted some action items for the next meeting:

- EPA will develop one or two options on how to proceed with the sampling plan to define geographic extent and contaminants of concern. This planning effort will be conducted in concert with the planning activities of the signature development subpanel. These sampling options will be ready for discussion at the July 26, 2004 meeting.
- EPA will work with McVay Hughes and Siegel de Hernandez to explore mechanisms for community participation.
- A better inventory of school and fire department buildings needs to be developed to see how these buildings are distributed geographically.
- EPA will investigate options for funding the Community Participation and Signature Development Subpanel efforts.
- Dr. Gilman will follow up with Newman on developing next steps for collecting data from other sources.

- Dr. Gilman will follow up with Radhakrishnan to compile data into a format that may be shared.
- Some panelists and the community have requested transcripts of future technical panel meetings.
- Some panelists asked that discussion on “unmet health needs” be initiated at the next meeting.
- The panelists will review the COPC document prior to the next technical panel meeting.

Dr. Gilman thanked everyone for their time and hard work and concluded the meeting.

ATTACHMENT A
Agenda

United States
Environmental Protection Agency

4th Meeting of the WTC Expert Technical Review Panel

St. John's University
Saval Auditorium
101 Murray Street
New York, NY
June 22, 2004

Agenda

9:00AM Registration

9:30AM Welcome, Purpose of Today's Meeting and Opening Remarks
Drs. Paul Gilman (Chair) and Paul Lioy (Vice Chair)

9:40AM Update on Community-Based Participatory Research (Public Participation Subgroup)

10:15AM Identifying Signatures for WTC Contamination: Report From Subgroup on Proposed Time Table to Develop a Validated WTC Dust Signature Method
(Dr. Morton Lippman)

Panel discussion

11:15AM Public Comment/Question and Answer Session

12:15PM Lunch

1:15PM Panel Discussion Regarding Screening Survey

1. Geographic extent of WTC contamination
2. WTC contamination as a function of building use and cleaning history
3. HVAC testing and cleaning

(*Overview Presentation, Dr. Les Sparks, EPA's Office of Research and Development,*
National Homeland Security Research Center)

3:00PM Break

3:15PM Continue Panel Discussion Regarding Screening Survey

4:15PM Update on Community-Based Participatory Research (Public Participation Subgroup)

4:30PM Public Comment/Question and Answer Session

5:15PM Adjourn

ATTACHMENT B
Public Comments Submitted in Writing